

**Table 5I-1 - Cut and Fill Summary
Areas TS-3 Through TS-9**

Area	Fill (-) Volume (cu. yd.)	Cut (+) volume (cu. yd.)	Excess Volume (cu. yd.) ¹
TS-3	1,454	1,468	14
TS-4	3,460	3,473	13
TS-5	25,157	39,907	14,750
TS-6	5,573	8,126	2,553
TS-7	18,037	6,445	-11,592
TS-8	7,022	3,666	-3,356
TS-9	5,851 10,954	5,889 10,911	38 -43
Cumulative Balanced Volume (cu. yd.) =			2,420 2,377

¹ An excess volume of 2,420 cu. Yds. will be generated based on the contours shown on Plates 5-6. This excess is generated in Reclamation Area TS-5, and demonstrates that there is adequate material for reclamation. During reclamation, actual contours in TS-5 can be varied in the areas of cut to eliminate this excess cut. This excess material may also be used to cover any soil found to be unsuitable at the time of reclamation.

File in:

Confidential
 Shelf
 Expandable
 Refer to Record No 0018 Date 05152008
 In C 0150025, 2008 Incoming
 For additional information

TS-9 Sediment Pond C and Bathhouse Pad

The material generated for the bathhouse parking area will be used as fill material for Sediment Pond C and the ditch leading from the Bathhouse Pad to Sediment Pond C. The 1,200 cu. yd. topsoil stockpile created during the construction of the bathhouse pad will be used in conjunction with the substitute topsoil generated from the bathhouse pad.

Table 5I-8 - Area TS-9 Cut & Fill summary

Section	Fill (-) Volumes (cu. yd.)			Cut (+) Volumes (cu. yd.)			Volume Cumulative (cu. yd.)
	Topsoil	Substitute Topsoil	Regular Soil	Topsoil	Substitute Topsoil	Regular Soil	
D-D	1,200*	1,762	<u>2,899*</u> <u>7,992</u>	<u>1,200</u> <u>1,483</u>		2,561	<u>2,128</u> <u>6,867</u> <u>28-43</u>

* It was assumed that sediment Pond C would contain 98 cu. yd. of sediment at the start of reclamation. 1,200 cu. yd. of material will come from the Wild Horse Ridge topsoil stockpile, which was originally recovered from the Bathhouse Pad.

Table 7-23 Summary of Storm Runoff Calculations for 10 Year 6 Hour Storm

Watershed	Curve Number CN	Time of Concentration (Hr)	Drainage Area (Acres)	Peak Discharge (CFS)
AU-1	76	0.094	6.46	0.83
AU-1A	83	0.032	1.36	0.51
AU-1B	83	0.026	1.16	0.44
AU-1C	76	0.120	16.40-16.04	1.95
AU-2	76	0.075	2.23	0.30
AU-2A	76	0.077	1.64	0.22
AU-2B	76	0.081	3.80	0.51
AU-3	76	0.078	3.87	0.52
AU-3A	76	0.016	0.30	0.05
AU-4	76	0.093	7.97	1.02
AU-4A	83	0.029	0.92	0.35
AU-5	76	0.104	20.14	2.51
AU-6	76	0.059	2.73	0.39
AU-7	76	0.094	13.46	1.72
AU-8	76	0.050	4.95	0.72
AU-9	76	0.100	4.77	0.60
AU-10	76	0.137	35.52	4.05
AU-11	76	0.045	0.62	0.09
AU-12	76	0.050	2.33	0.34
AU-13	76	0.022	0.66	0.10
AU-14	76	0.050	2.43	0.35
AU-15	76	0.058	0.91	0.13
AU-16	76	0.152	44.93	4.92
AU-17	76	0.152	30.10	3.29
AU-18	76	0.152	36.55	4.00
AU-19	76	0.144	36.03	4.03

Table 7-23 Summary of Storm Runoff Calculations for 10 Year 6 Hour Storm (cont)

Watershed	Curve Number CN	Time of Concentration (Hr)	Drainage Area (Acres)	Peak Discharge (CFS)
AD-1A	76	0.090	3.70	0.48
AD-1B	76	0.037	2.12	0.32
AD-2A	76	0.040	0.97	0.15
AD-2B	83	0.025	1.08	0.41
AD-2C	83	0.012	0.25	0.10
AD-3A	76	0.034	1.49	0.23
AD-3B	76	0.034	0.78	0.12
AD-4	83	0.011	0.08	0.03
AD-5	76	0.056	2.13	0.30
AD-6	90	0.220	1.39	0.81
AD-7	90	0.145	2.95	1.83
AD-8 upper	90	0.021	0.70	0.48
AD-8 lower	90	0.247	2.79	1.59
AD-9	90	0.069	0.35	0.23
AD-10 upper	90	0.026	0.30	0.20
AD-10 lower	90	0.078	0.65	0.42
AD-11	95	0.011	0.69	0.65
AD-12 upper	90	0.020	0.22	0.15
AD-12 lower	90	0.076	0.34	0.22
AD-13	91	0.106	1.78	1.23
AD-14	90	0.009	0.08	0.05
AD-15	90	0.069	1.83 2.19	1.20 1.44
AD-16	90	0.030	0.77	1.24
AD-17	90	0.019	0.24	0.16
AD-18	90	0.170	0.9	0.55
AD-19	90	0.009	0.15	0.10
AD-20	90	0.0102	0.65	0.44
AD-21	90	0.0061	0.23	0.16

¹ Sized for the 100 Yr – 6 hr storm event.

Table 7-24 Summary of Division Ditch Calculations

Ditch	Bottom Width (Ft)	Top Width (Ft)	Depth (Ft)	Type Side Slope H:V	Measured Slope %	Contributing Watershed	REQ'D Av. Rip-Rap Size (In.)
D-1D	0	1.33	0.67	1:1	2 Min 11 Max	AD-3A	Soil
D-2D	0	1.33	0.67	1:1	6 Min 20 Max	AD-3A, AD-5	Bedrock
D-3D	0	2	1	1:1	2 Min 6 Av. 18 Max	AD-3A, AD-5, AD-7	Soil Soil Grouted
D-4D	0	2	1	1:1	2 Min 6 Av. 17 Max	AD-14	Soil Soil D_{50} 6"
D-5D	0	1.33	0.67	1:1	4 Min 10 Max	AD-9	Soil
D-6D	0	3	1.5	1:1	2 Min 4 Max	AD-3A, AD-5 AD-7, AD-9, AD-10 AD-12, AD-14	Soil
D-7D	2	3.5	0.75	1.5:1	2 Min 6 Av. 55 Max	AD-1A, AD-1B, AD-2A AD-2B, AD-2C, AD-3B AD-4, AD-6, AD-8	Soil Soil D_{50} 6"
D-8D	0	2	1	1:1	2 Min 7 Max	AD-13	Soil
D-8D Water Bar	0	14	0.33	6:1	3 Av.	AD-13	Soil
D-9D	0	2	1	1:1	4 Min 10	AD-15	Soil
D-10D	1	3.33	0.67	1.5:1	7 Min 50	AD-6, AD-3B, (part) AD-2B, AD-2C	D_{50} 4" Bedrock
D-11D	0	1	0.5	1:1	41 Min Near Vert.	Tipple Wash Hose	Grouted Rip-Rap
D-12D	0	1	0.5	1:1	81 Av.	Tipple Wash Hose	Soil
D-13D Water Shed	0	6	0.5	10:1 2:1	0.5 Av.	AD-6 Partial	Soil
D-14D	0	1.33	0.67	1.5:1	0.06 Av.	AU-4A	Soil
D-15D	0	2.00	1.00	1:1	0.05 Av.	AD-16	Soil
D-16D	0	1.50	1.75	1:1	0.05 Av.	AD-18	Soil
D-17D	0	.96	1	1:1	0.08 Av.	AU-23, AD-20	Soil

- Notes:
1. Dimensions given indicate minimum requirements. Actual dimensions may vary. Minimum required cross-sections will be maintained.
 2. The use of line drainage ditches is required when flow velocities exceed approximately 5 feet per second. Rip-rap may be installed where not required.

WATERSHED CHARACTERISTICS

Disturbed Areas

$P = 1.5"$

<u>Watershed</u>	<u>CN</u>	<u>Area (Ac.)</u>	<u>Slope y (%)</u>	<u>Hyd length 1 (ft.)</u>	<u>$\frac{1000}{S=-10 \text{ CN}}$</u>	<u>$\frac{l^8(s+1)^7}{L=1900Y^5}$</u>	<u>T=1.67L</u> <u>Time of Conc (hr)</u>
1AD-1A	76	3.70	66	1,300	3.16	0.050	0.090
AD-1B	76	2.12	95.5	520	3.16	0.022	0.037
AD-2A	76	0.97	72	440	3.16	0.020	0.040
AD-2B	83	1.08	59	320	2.05	0.015	0.025
AD-2C	83	0.25	64	140	2.05	0.007	0.012
AD-3A	76	1.49	70	400	3.16	0.021	0.034
AD-3B	76	0.78	71	400	3.16	0.020	0.034
AD-4	83	0.08	49	100	2.05	0.007	0.011
AD-5	76	2.13	73	760	3.16	0.034	0.056
AD-6	90	1.39	1.7	720	1.11	0.131	0.220
AD-7	90	2.95	8.0	1,130	1.11	0.087	0.145
AD-8 upper	90	0.70	70	400	1.11	0.013	0.021
AD-8 lower	90	2.79	1.0	600	1.11	0.148	0.247
AD-9	90	0.35	7.2	420	1.11	0.042	0.069
AD-10 upper	90	0.30	34	320	1.11	0.015	0.026
AD-10 lower	90	0.65	2.0	220	1.11	0.047	0.078
AD-11	95	0.69	20	110	0.53	0.007	0.011
AD-12 upper	90	0.22	64	340	1.11	0.012	0.020
AD-12 lower	90	0.34	8.0	500	1.11	0.045	0.076
AD-13	91	1.78	8.0	800	0.99	0.063	0.106
AD-14	90	0.08	61	120	1.11	0.005	0.009
AD-15	90	1.83 <u>2.19</u>	10.5	530	1.11	0.041	0.069
AD-16*	90	0.77	22	303	1.11	0.018	0.030
AD-17*	90	0.24	27	190	1.11	0.011	0.019
AD-18	90	0.9	3.2	771	1.11	0.102	0.170
AD-19*	90	0.15	49.24	109	1.11	0.005	0.009
AD-20*	90	0.47	30.48	204	1.11	0.0113	0.019

*Areas AD-16, AD-17 and AD-19 are ASCA areas treated by alternate sediment controls.

WATERSHED CHARACTERISTICS
 Undisturbed Areas
 and ASCA Areas Not Reporting To Sediment Pond

<u>Watershed</u>	<u>CN</u>	<u>Area (Ac.)</u>	<u>Slope y (%)</u>	Hyd length <u>l (ft.)</u>	<u>P = 1.5"</u>		<u>T=1.67L</u> Time of Conc (hr)
					<u>S=-10 CN</u>	<u>L=1900Y⁵</u> <u>l^{8(s+1)⁷}</u>	
AU-1	76	6.46	57	1,240	3.16	0.056	0.094
AU-1A	83	1.36	65	460	2.05	0.019	0.032
AU-1B	83	1.16	59	330	2.05	0.015	0.026
AU-1C	76	16.40 16.04	72	1,950	3.16	0.072	0.120
AU-2	76	2.23	62	975	3.16	0.045	0.075
AU-2A	76	1.64	63	1,025	3.16	0.046	0.077
AU-2B	76	3.80	63	1,100	3.16	0.049	0.081
AU-3	76	3.87	65	1,060	3.16	0.047	0.078
AU-3A	76	0.30	64	140	3.16	0.009	0.016
AU-4	76	7.97	63	1,300	3.16	0.056	0.093
AU-4A	83	0.92	52	357	2.05	0.018	0.029
AU-5	76	20.14	77.3	1,700	3.16	0.062	0.104
AU-6	76	2.73	70.0	780	3.16	0.035	0.059
AU-7	76	13.46	69.4	1,400	3.16	0.056	0.094
AU-8	76	4.95	85.7	720	3.16	0.030	0.050
AU-9	76	4.77	64.8	1,440	3.16	0.060	0.100
AU-10	76	35.52	76.1	2,380	3.16	0.082	0.137
AU-11	76	0.62	73.0	570	3.16	0.027	0.045
AU-12	76	2.33	44.1	480	3.16	0.030	0.050
AU-13	76	0.66	77.5	240	3.16	0.013	0.022
AU-14	76	2.43	66.7	620	3.16	0.030	0.050
AU-15	76	0.91	15.6	300	3.16	0.035	0.058
AU-16	76	44.93	71.0	2,580	3.16	0.091	0.152
AU-17	76	30.10	71.0	2,580	3.16	0.091	0.152
AU-18	76	36.55	71.0	2,580	3.16	0.091	0.152
AU-19	76	36.03	60.5	2,190	3.16	0.086	0.144
AU-20	76	20.55	57.6	1,880	3.16	0.078	0.131
AU-21	76	9.45	48.4	1,360	3.16	0.066	0.110
AU-22	76	12.05	60.3	1,120	3.16	0.051	0.084

Summary of Peak Flows for 10-year, 6-hour storm P=1.5"
 (SCS type B distribution)

<u>Watershed</u>	<u>Peak Q (cfs.)</u>	<u>Watershed</u>	<u>Peak Q (cfs.)</u>	<u>Watershed</u>	<u>Peak Q (cfs.)</u>
AD-1A	0.48	AU-1B	0.44	AU-23	0.78
AD-1B	0.32	AU-1B	0.44	AU-24	1.66
AD-2A	0.15	AU-1C	1.95	AU-25	0.30
AD-2B	0.41	AU-2	0.30	AU-26	0.10
AD-2C	0.10	AU-2A	0.22	AU-27	0.03
AD-3A	0.23	AU-2B	0.50	AU-28	0.10
AD-3B	0.12	AU-3	0.52	AU-29	0.29
AD-4	0.03	AU-3A	0.05	AU-29A	0.67
AD-5	0.30	AU-4	1.02	AU-30	0.08
AD-6	0.81	AU-4A	0.35	AU-31	0.32
AD-7	1.83	AU-5	2.51	AU-32	0.28
AD-8 upper	0.48	AU-6	0.39	AU-33	0.11
AD-8 lower	1.59	AU-7	1.72	AU-34	0.27
AD-9	0.23	AU-8	0.72	AU-35	0.13
AD-10 upper	0.20	AU-9	0.60	AU-36	0.12
AD-10 lower	0.42	AU-10	4.05	AU-37	13.64
AD-11	0.65	AU-11	0.09	AU-38	1.15
AD-12 upper	0.15	AU-12	0.34	AU-39	0.18
AD-12 lower	0.22	AU-13	0.10	AU-40	15.96
AD-13	1.23	AU-14	0.35	AU-41	1.46
AD-14	0.05	AU-15	0.13	AU-42	0.67
AD-15	4.20 <ins>1.44</ins>	AU-16	4.92	AU-43	1.75
AD-16	1.24	AU-17	3.29	BEAR CREEK	108.18
AD-17	0.16	AU-18	4.00	BEAR CREEK ¹	412.70
AD-18	0.55	AU-19	4.03		
AD-19	0.10	AU-20	2.37		
AU-1	0.83	AU-21	1.15		

PEAK
HYDROGRAPH GENERATION PROGRAM

INPUT SUMMARY FOR W.S.: AD-14

STORM:	WATERSHED:
Distribution = SCS Type 'B' Precip. Depth = 1.50 in Duration = 6.00 hr	Curve Number = 90 Time of Conc. = 0.009 hrs Area = 0.08 ac

OUTPUT SUMMARY

Runoff depth = 0.6835 in Initial Abstraction = 0.2222 in Peak Flow = 0.05 cfs (0.6792 iph) At T = 2.50 hrs

INPUT SUMMARY FOR W.S.: AD-15

STORM:	WATERSHED:
Distribution = SCS Type 'B' Precip. Depth = 1.50 in Duration = 6.00 hr	Curve Number = 90 Time of Conc. = 0.069 hr Area = 1.83 <u>2.19</u> ac

OUTPUT SUMMARY

Runoff depth = 0.6835 in Initial Abstraction = 0.2222 in Peak Flow = <u>1.201.44</u> cfs (0.6506 <u>0.6513</u> iph) At T = 2.50 hrs
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PEAK
HYDROGRAPH GENERATION PROGRAM

INPUT SUMMARY FOR W.S.: AU-1B

STORM:	WATERSHED:
Distribution = SCS Type 'B' Precip. Depth = 1.50 in Duration = 6.00 hr	Curve Number = 83 Time of Conc. = 0.026 hr Area = 1.16 ac

OUTPUT SUMMARY

Runoff depth = 0.3788 in Initial Abstraction = 0.4096 in Peak Flow = 0.44 cfs (0.3753 iph) At T = 2.50 hrs

INPUT SUMMARY FOR W.S.: AU-1C

STORM:	WATERSHED:
Distribution = SCS Type 'B' Precip. Depth = 1.50 in Duration = 6.00 hr	Curve Number = 76 Time of Conc. = 0.120 hr Area = 16.40 <ins>16.04</ins> ac

OUTPUT SUMMARY

Runoff depth = 0.1873 in Initial Abstraction = 0.6316 in Peak Flow = 1.95 cfs (0.1180 iph) At T = 2.54 hrs

DITCH CHARACTERISTICS

DITCH	CHANNEL SLOPE %	CONTRIBUTING WATERSHED	PEAK Q(cfs)	BANK AND BOTTOM DESC.	MANNING'S $\eta^{(a)}$
D-1D	2 Min, 11 Max	AD-3A	0.23	Rocky Soil	0.03
D-2D	6 Min, 20 Max	AD-3A, AD-5	0.53	Rocky Soil, Bedrock	0.03
D-3D		Replaced with C-5D			
D-4D	2 Min, 7 Av 17 Max	AD-14	0.05	Soil	0.03
D-5D		Replaced with C-5D			
D-6D	2 Min, 4 Max	AD-3A, AD-5, AD-7 AD-9, AD-10, AD-12 AD-14	3.63	Rocky Soil	0.03
D-7D	2 Min, 6 Av 55 Max	AD-1A, AD-1B, AD-2A AD-2B, AD-2C, AD-3B AD-4, AD-6, AD-8	4.90	Soil $D_{50} \leq 3"$	0.03 0.033
D-8D	2 Min, 7 Max	AD-13	1.23	Soil	0.03
D-8D Water Bar	3 Av.	AD-13	1.23	Soil	0.013
D-9D	4 Min, 10 Max	AD-15	1.20 1.44	Soil	0.03
D-10D	7 Min, 50 Max	AD-6, AD-3B, AD-2C	1.03	$D_{50} \leq 4"$	0.033
D-11D	41 Min Near Vertical Max	TIPPLE WASH HOSE	0.25	Grouted rip-rap	0.035
D-12D	81 Av.	TIPPLE WASH HOSE	0.25	Grouted	0.03
D-13D Water Bar	0.5 Av.	AD-6 Partial	0.23	Soil	0.03
D-14D	0.06 Av.	AU-4A	0.35	Soil	0.03
D-15D	0.05 Av.	AD-16	1.24	Soil	0.03
D-16D	0.05 Av.	AD-18	0.55	Soil	0.03
D-17D	0.08	AU-23,AD-20	0.99		

Worksheet Worksheet for Trapezoidal Channel

Project Description

Worksheet DITCH D-9D
Flow Element Trapezoidal
Channel
Method Manning's
Formula
Solve For Channel
Depth

Input Data

Mannings Coefficient 0.030
Slope 0.040000 ft/ft
Left Side Slope 1.00 V : H
Right Side Slope 1.00 V : H
Bottom Width 1.00 ft
Discharge 1.44 cfs

Results

Depth 0.31 ft
Flow Area 0.4 ft²
Wetted Perimeter 1.87 ft
Top Width 1.55 ft
Critical Depth 0.35 ft
Critical Slope 0.024744 ft/ft
Velocity 3.56 ft/s
Velocity Head 0.20 ft
Specific Energy 0.51 ft
Froude Number 1.26
Flow Type Supercritical

Use Minimum Depth = 1 ft
Velocity < 5 fps

Minimum Freeboard = 0.69 ft
No rip-rap required

B.C.

7G-130

05/09/08

Worksheet Worksheet for Trapezoidal Channel

Project Description

Worksheet	DITCH D-9D (Max Slope)
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data

Mannings Coefficient	0.030
Slope	0.100000 ft/ft
Left Side Slope	1.00 V : H
Right Side Slope	1.00 V : H
Bottom Width	1.00 ft
Discharge	1.44 cfs

Results

Depth	0.24 ft
Flow Area	0.3 ft ²
Wetted Perimeter	1.67 ft
Top Width	1.47 ft
Critical Depth	0.35 ft
Critical Slope	0.024744 ft/ft
Velocity	4.941 ft/s
Velocity Head	0.37 ft
Specific Energy	0.61 ft
Froude Number	1.94
Flow Type	Supercritical

B.C.

7G-131

05/09/08

Pavement

02220-875-1750 (Pavement Removal 3")

Area = ~~1,450~~ 1,182 square yards (~~1,200~~ 4,008 at Bath-House, 174 at load-out)

Cost = (\$3.85 /sq yd) (1,374 sq yd) = ~~\$5,290~~ 16,101

Time = (1,374 sq yd) / (420 sq yd/day) = ~~3.27~~ 9.96 days

Asphalt will be relayed at Trail Canyon

Volume = ~~(144~~ 348 CY) (2 tons/yd) (1.3 swell factor) = ~~297~~ 905 Tons

16 ton truck; distance to haul approx. 4 miles round trip = ~~3-8~~ 57 trips/day

Time = ~~(144~~ 348 cu yd)/(128 cu yd/day) = ~~0.89~~ 2.72 days

01590-200- 5300 Dump Truck Cost = (\$823.88/day) (2.72 days) = ~~\$824~~ 2,472

Cost Subtotal	\$6,114 <ins>18,573</ins>
Time Subtotal	4.2 <ins>12.7</ins> days

Shower House

02220-100-0100 (Framed Portion, includes disposal)

Volume = (92 ft) (50 ft) (8 ft) = 36,800 cu ft

Cost = (\$ 0.24 /cu ft) (36,800 cu ft) = \$ 8,832

Dump Fee = ((36,800 cu ft) / 27) (0.3 rubble volume) (1.35 tons/cy) (\$7.00/ton) = \$3,864

Time = (36,800 cu ft) / (20,100 cu ft/day) = 1.83 days

02220-100-0080 (Masonry Portion, includes disposal)

Volume = (92 ft) (50 ft) (8 ft) = 36,800 cu ft

Boot wash Volume = (12 ft) (5.5 ft) (8 ft) = 528 cu ft

Cost = (\$ 0.24 /cu ft) (37,328 cu ft) = \$ 8,959

Dump Fee = ((37,328 cu ft) / 27) (0.3 rubble volume) (1.35 tons/cy) (\$7.00/ton) = \$3,919

Time = (37,328 cu ft) / (20,100 cu ft/day) = 1.86 days

Concrete Demolition

Foundation Volume = (0.67 ft) (2 ft) (284 ft) = (380.6 cu ft) / 27 = 14.1 cu yds

Footing Volume = (0.67 ft) (2 ft) (319 ft) = (427.5 cu ft) / 27 = 15.8 cu yds

Floor Volume = (92 ft) (50 ft) (0.33 ft) = (1518 cu ft) / (27) = 56.2 cu yds

Boot wash Floor Volume = (12 ft) (5.5 ft) (0.33 ft) = (21.8) / 27 = 0.81 cu yds

Total Volume = 86.9 cu yds

Cost = (86.9 CY) (\$12.78/CY) = \$1,111

Time = (638 s.f.) / (180 s.f./day) + (319 L.F.) / (300 L.F./day) + (4,666 s.f.) / (500 s.f./day) = 13.94 days

02220-875-5550 (Concrete Disposal on Site) 002315-400-1300 (3 CY loader) 02320-200-0320
(16 ton truck)

Volume = (86.9 CY) (1.3 swell factor) = 113.0

Cost = (113 CY) (\$10.69/CY) = \$1,208

Time = (113 cu. yds) / (232 cu. yds/day) = 0.49 days

Cost Subtotal	\$ 27,893
Time Subtotal	18.12 days

Scale House and Sediment Pond B (TS-3)

See Appendix 3L, Table 3L-2

Cut Subtotal	1,454 cu yds
Fill Subtotal	1,454 cu yds

Sediment Pond "A" (TS-4)

See Appendix 3-L, Table 3L-3.

Cut (350 sq ft) x (120ft) = 42,000 cu ft	<u>Cut Subtotal</u> = 3,460 cu yds
Fill (350 sq ft) x (120ft) = 42,000 cu ft	<u>Fill Subtotal</u> = 3,460 cu yds

Shower House and Sediment Pond C (TS-9)

See Appendix 3-L5-1, Table 3L51-8.

Cut (500 sq ft) x (185ft) = 92,500 cu ft	<u>Cut Subtotal</u> = 5,851 <u>10,954</u> cu yds
Fill (500 sq ft) x (185ft) = 92,500 cu ft	<u>Fill Subtotal</u> = 5,851 <u>10,954</u> cu yds

Wild Horse Ridge (TS-12 thru TS-15)

See Appendix 3-O, Table 3O-2, 3 & 4

Cut Subtotal = 23,641 cu yds
Fill Subtotal = 23,641 cu yds

Note: Approximately 12,500 cu yds of the Wild Horse Ridge volume will be regraded using a D9 dozer, and the remaining volume will be regraded using a 330BL Excavator.

Wild Horse Ridge Tank Seam (TS-16 thru TS-17)

See Appendix 3-P.

Cut Subtotal	11,089 cu yds
Fill Subtotal	11,089 cu yds

Cut Total =	112,025 cu yds
Fill Total =	112,025 cu yds

SOIL PLACEMENT

Areas	Time	Earth			Equipment		
		Cost	Moved	Cu Yds	Used	Cost/hr	(hrs)
Tank Seam Access Road & Portal Pad (TS-10 & TS-11) Fill		Cut 20,310		20,310 330BL		\$153.13	20.2 \$ 3,093
			Hauled	10,661			
Upper Storage Pad (TS-8)	Cut	3,666 Fill		330BL 7,022		\$153.13	14.6 \$ 2,236
Portal Pad Area & Road (TS-7)		Cut Fill	6,445 18,037	330BL		\$153.13	37.7 \$ 5,773
Portal Access Road (TS-6)	Cut	8,126 Fill Excess Cut	5,573 2,553	330BL included in fill volumes above		\$153.13	11.65 \$ 1,784
Coal Storage Pad (TS-5)		Cut Fill Excess Cut	40,585 25,157 15,428	D9 Cat included in fill volumes above		\$190.80	50.3 \$ 9,597
Scale House/ Sed Pond B (TS-3)		Cut Fill	1,454 1,454	D9 Cat		\$190.80	2.9 \$ 553
Sediment Pond "A" (TS-4)	Cut	3,460 Fill		3,460 D9 Cat		\$190.80	6.9 \$ 1,317
Shower House/ Sed Pond C (TS-9)	Cut	-5,851 10,954 Fill		-5,851 10,954 D9 Cat		\$190.80	11.7 21.9 \$ 2,232 4,178
Wild Horse Ridge Area*** (TS-12 thru TS-15)	Cut	11,141 12,500 Fill		330BL D9 Cat 23,641		\$153.13 \$190.80	23.3 25.0 \$ 3,568 \$ 4,770
Wild Horse Ridge Tank Seam (TS-16 thru TS-17)	Cut Fill	1,016 11,089		D9 Cat 10,073 330BL		\$153.13 \$190.80	1.87 20.1 \$ 286 \$ 3,835
Totals		Cut Fill	110,462 125,138 110,708 126,697			219.82 236.42 \$39,044 40,990 (27.48 days)	

*See Appendix 3-L and the following page.

**Excess Cut will be hauled from TS-5 and TS-6 to TS-7 and TS-8, as discussed in Appendix 3-L.

***Wild Horse Ridge material being relocated with the excavator will be hauled an average distance of 200 ft, as shown on the following pages.

e. Revegetation

Hydroseeding (Section 9.5)

C0150256 (Hydro Spreader)

$$\text{Area} = 38.3 \underline{38.7} \text{ acres} = 1,669 \underline{1,686} \text{ MSF}$$

$$\text{Cost} = (\$19.85 \underline{20.95} / \text{MSF}) (1,669 \underline{1,686} \text{ MSF}) = \$33,130 \underline{35,322}$$

C0150255 (Tractor Spreader)

$$\text{Area} = 38.3 \underline{38.7} \text{ acres} = 1,669 \underline{1,686} \text{ MSF}$$

$$\text{Cost} = (\$10.28 \underline{12.71} / \text{MSF}) (1,669 \underline{1,686} \text{ MSF}) = \$17,157 \underline{21,429}$$

C0150251 (Seed Material)

$$\text{Area} = 38.3 \underline{38.7} \text{ acres}$$

$$\text{Cost} = (\$974.10 \underline{533.38} / \text{acre}) (38.3 \underline{38.7}) = \$37,308 \underline{20,642}$$

C0150253 (Hydromulch)

$$\text{Area} = 38.3 \underline{38.7}$$

$$\text{Cost} = (\$410.25 \underline{523.95} / \text{acre}) (38.3 \underline{38.7}) = \$15,712 \underline{20,277}$$

C0150252 (3,704 10.700 Seedlings)

$$\text{Cost} = (\$0.77 \underline{1.71} \text{ each}) (3834 \underline{10,700}) = \$2,952 \underline{18,297}$$

02370-550-0120 Install Matting (Section 9.5)

$$\text{Cost} = (\$7.5 \underline{7.00} \text{ sys}) (29,040 \underline{4,840}) = \$217,800 \underline{203,280}$$

02315-400-0260 (Pocking)

$$\text{Cost} = (\$1.56 \underline{1.86} / \text{cu yd}) (29,689 \underline{340} \text{ cu yd}) = \$46,315 \underline{10,435}$$

Assume 25% reseeding = \$92,594 82,420

Time = (38.3 38.7 acres) / (4 acres/day) = 9.58 9.68 days

Cost Total \$462,968 412,102
Time Total 9.58 9.68 days

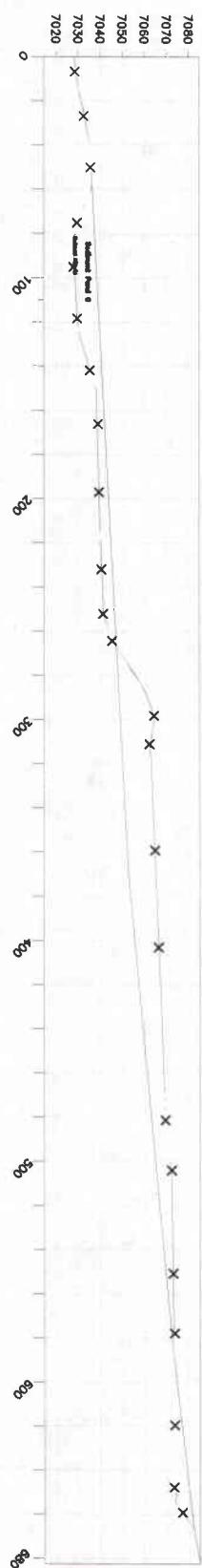
f. Monitor Well Plugging

Assume \$5,000 per well

The above listed costs include reclamation costs added between 1985 and the latest modification.

SECTION D-D
SEDIMENT POND "C"

— PRE-MINING/POST-MINING
— OPERATION



CO-OP MINING COMPANY

P.O. Box 1245
Huntington, Utah 84528



Office (435) 687-2450
FAX (435) 687-2084

May 15, 2008

Coal Program
Utah Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

To Whom It May Concern,

Re: Parking lot, Bear Canyon Mine, ACT/015/025

Enclosed is 1 hard copy and 4 digital copies of our Parking lot Amendment.

If you have any questions, please call me at (435) 687-5777.

Thank You,

Shawn Baker
Mining Engineer

Enclosure(s)

APPLICATION FOR COAL PERMIT PROCESSING

Permit Change New Permit Renewal Exploration Bond Release Transfer

Permittee: CO-OP MINING COMPANY

Mine: BEAR CANYON MINE

Permit Number: ACT/015/025

Title: Parkinglot

Description, Include reason for application and timing required to implement:

To expand the shower house parking lot

Instructions: If you answer yes to any of the first eight (gray) questions, this application may require Public Notice publication.

- Yes No 1. Change in the size of the Permit Area? Acres: _____ Disturbed Area: _____ increase decrease.
- Yes No 2. Is the application submitted as a result of a Division Order? DO# _____
- Yes No 3. Does the application include operations outside a previously identified Cumulative Hydrologic Impact Area?
- Yes No 4. Does the application include operations in hydrologic basins other than as currently approved?
- Yes No 5. Does the application result from cancellation, reduction or increase of insurance or reclamation bond?
- Yes No 6. Does the application require or include public notice publication?
- Yes No 7. Does the application require or include ownership, control, right-of-entry, or compliance information?
- Yes No 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
- Yes No 9. Is the application submitted as a result of a Violation? NOV # _____
- Yes No 10. Is the application submitted as a result of other laws or regulations or policies?
- Explain:* _____
- Yes No 11. Does the application affect the surface landowner or change the post mining land use?
- Yes No 12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2)
- Yes No 13. Does the application require or include collection and reporting of any baseline information?
- Yes No 14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
- Yes No 15. Does the application require or include soil removal, storage or placement?
- Yes No 16. Does the application require or include vegetation monitoring, removal or revegetation activities?
- Yes No 17. Does the application require or include construction, modification, or removal of surface facilities?
- Yes No 18. Does the application require or include water monitoring, sediment or drainage control measures?
- Yes No 19. Does the application require or include certified designs, maps or calculation?
- Yes No 20. Does the application require or include subsidence control or monitoring?
- Yes No 21. Have reclamation costs for bonding been provided?
- Yes No 22. Does the application involve a perennial stream, a stream buffer zone or discharges to a stream?
- Yes No 23. Does the application affect permits issued by other agencies or permits issued to other entities?

Please attach four (4) review copies of the application. If the mine is on or adjacent to Forest Service land please submit five (5) copies, thank you. (These numbers include a copy for the Price Field Office)

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

Print Name

Sign Name, Position, Date

Subscribed and sworn to before me this _____ day of _____, 20_____

Notary Public _____

My commission Expires: _____, 20_____
Attest: State of _____ }
County of _____ } ss:

For Office Use Only:

Assigned Tracking
Number:

Received by Oil, Gas & Mining

APPLICATION FOR COAL PERMIT PROCESSING
Detailed Schedule Of Changes to the Mining And Reclamation Plan

Permittee: CO-OP MINING COMPANY

Mine: BEAR CANYON MINE

Title: Parkinglot

Permit Number: ACT/015/025

Provide a detailed listing of all changes to the Mining and Reclamation Plan, which is required as a result of this proposed permit application. Individually list all maps and drawings that are added, replaced, or removed from the plan. Include changes to the table of contents, section of the plan, or other information as needed to specifically locate, identify and revise the existing Mining and Reclamation Plan. Include page, section and drawing number as part of the description.

DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED

Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.	Received by Oil, Gas & Mining
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**Table 5I-1 - Cut and Fill Summary
Areas TS-3 Through TS-9**

Area	Fill (-) Volume (cu. yd.)	Cut (+) volume (cu. yd.)	Excess Volume (cu. yd.) ¹
TS-3	1,454	1,468	14
TS-4	3,460	3,473	13
TS-5	25,157	39,907	14,750
TS-6	5,573	8,126	2,553
TS-7	18,037	6,445	-11,592
TS-8	7,022	3,666	-3,356
TS-9	5,851 10,954	5,889 10,911	38 -43
Cumulative Balanced Volume (cu. yd.) =			2,420 2,377

¹ An excess volume of 2,420 cu. Yds. will be generated based on the contours shown on Plates 5-6. This excess is generated in Reclamation Area TS-5, and demonstrates that there is adequate material for reclamation. During reclamation, actual contours in TS-5 can be varied in the areas of cut to eliminate this excess cut. This excess material may also be used to cover any soil found to be unsuitable at the time of reclamation.

TS-9 Sediment Pond C and Bathhouse Pad

The material generated for the bathhouse parking area will be used as fill material for Sediment Pond C and the ditch leading from the Bathhouse Pad to Sediment Pond C. The 1,200 cu. yd. topsoil stockpile created during the construction of the bathhouse pad will be used in conjunction with the substitute topsoil generated from the bathhouse pad.

Table 5I-8 - Area TS-9 Cut & Fill summary

Section	Fill (-) Volumes (cu. yd.)			Cut (+) Volumes (cu. yd.)			Volume Cumulative (cu. yd.)
	Topsoil	Substitute Topsoil	Regular Soil	Topsoil	Substitute Topsoil	Regular Soil	
D-D	1,200*	1,762	<u>2,899*</u> <u>7,992</u>	<u>1,200</u> <u>1,483</u>		<u>2,128</u> <u>6,867</u>	<u>28</u> <u>-43</u>

* It was assumed that sediment Pond C would contain 98 cu. yd. of sediment at the start of reclamation. 1,200 cu. yd. of material will come from the Wild Horse Ridge topsoil stockpile, which was originally recovered from the Bathhouse Pad.

Table 7-23 Summary of Storm Runoff Calculations for 10 Year 6 Hour Storm

Watershed	Curve Number CN	Time of Concentration (Hr)	Drainage Area (Acres)	Peak Discharge (CFS)
AU-1	76	0.094	6.46	0.83
AU-1A	83	0.032	1.36	0.51
AU-1B	83	0.026	1.16	0.44
AU-1C	76	0.120	16.40-16.04	1.95
AU-2	76	0.075	2.23	0.30
AU-2A	76	0.077	1.64	0.22
AU-2B	76	0.081	3.80	0.51
AU-3	76	0.078	3.87	0.52
AU-3A	76	0.016	0.30	0.05
AU-4	76	0.093	7.97	1.02
AU-4A	83	0.029	0.92	0.35
AU-5	76	0.104	20.14	2.51
AU-6	76	0.059	2.73	0.39
AU-7	76	0.094	13.46	1.72
AU-8	76	0.050	4.95	0.72
AU-9	76	0.100	4.77	0.60
AU-10	76	0.137	35.52	4.05
AU-11	76	0.045	0.62	0.09
AU-12	76	0.050	2.33	0.34
AU-13	76	0.022	0.66	0.10
AU-14	76	0.050	2.43	0.35
AU-15	76	0.058	0.91	0.13
AU-16	76	0.152	44.93	4.92
AU-17	76	0.152	30.10	3.29
AU-18	76	0.152	36.55	4.00
AU-19	76	0.144	36.03	4.03

Table 7-23 Summary of Storm Runoff Calculations for 10 Year 6 Hour Storm (cont)

Watershed	Curve Number CN	Time of Concentration (Hr)	Drainage Area (Acres)	Peak Discharge (CFS)
AD-1A	76	0.090	3.70	0.48
AD-1B	76	0.037	2.12	0.32
AD-2A	76	0.040	0.97	0.15
AD-2B	83	0.025	1.08	0.41
AD-2C	83	0.012	0.25	0.10
AD-3A	76	0.034	1.49	0.23
AD-3B	76	0.034	0.78	0.12
AD-4	83	0.011	0.08	0.03
AD-5	76	0.056	2.13	0.30
AD-6	90	0.220	1.39	0.81
AD-7	90	0.145	2.95	1.83
AD-8 upper	90	0.021	0.70	0.48
AD-8 lower	90	0.247	2.79	1.59
AD-9	90	0.069	0.35	0.23
AD-10 upper	90	0.026	0.30	0.20
AD-10 lower	90	0.078	0.65	0.42
AD-11	95	0.011	0.69	0.65
AD-12 upper	90	0.020	0.22	0.15
AD-12 lower	90	0.076	0.34	0.22
AD-13	91	0.106	1.78	1.23
AD-14	90	0.009	0.08	0.05
AD-15	90	0.069	1.83 2.19	1.20 1.44
AD-16	90	0.030	0.77	1.24
AD-17	90	0.019	0.24	0.16
AD-18	90	0.170	0.9	0.55
AD-19	90	0.009	0.15	0.10
AD-20	90	0.0102	0.65	0.44
AD-21	90	0.0061	0.23	0.16

¹ Sized for the 100 Yr – 6 hr storm event.

Table 7-24 Summary of Division Ditch Calculations

Ditch	Bottom Width (Ft)	Top Width (Ft)	Depth (Ft)	Type Side Slope H:V	Measured Slope %	Contributing Watershed	REQ'D Av. Rip-Rap Size (In.)
D-1D	0	1.33	0.67	1:1	2 Min 11 Max	AD-3A	Soil
D-2D	0	1.33	0.67	1:1	6 Min 20 Max	AD-3A, AD-5	Bedrock
D-3D	0	2	1	1:1	2 Min 6 Av. 18 Max	AD-3A, AD-5, AD-7	Soil Soil Grouted
D-4D	0	2	1	1:1	2 Min 6 Av. 17 Max	AD-14	Soil Soil D_{50} 6"
D-5D	0	1.33	0.67	1:1	4 Min 10 Max	AD-9	Soil
D-6D	0	3	1.5	1:1	2 Min 4 Max	AD-3A, AD-5 AD-7, AD-9, AD-10 AD-12, AD-14	Soil
D-7D	2	3.5	0.75	1.5:1	2 Min 6 Av. 55 Max	AD-1A, AD-1B, AD-2A AD-2B, AD-2C, AD-3B AD-4, AD-6, AD-8	Soil Soil D_{50} 6"
D-8D	0	2	1	1:1	2 Min 7 Max	AD-13	Soil
D-8D Water Bar	0	14	0.33	6:1	3 Av.	AD-13	Soil
D-9D	0	2	1	1:1	4 Min 10	AD-15	Soil
D-10D	1	3.33	0.67	1.5:1	7 Min 50	AD-6, AD-3B, (part) AD-2B, AD-2C	D_{50} 4" Bedrock
D-11D	0	1	0.5	1:1	41 Min Near Vert.	Tipple Wash Hose	Grouted Rip-Rap
D-12D	0	1	0.5	1:1	81 Av.	Tipple Wash Hose	Soil
D-13D Water Shed	0	6	0.5	10:1 2:1	0.5 Av.	AD-6 Partial	Soil
D-14D	0	1.33	0.67	1.5:1	0.06 Av.	AU-4A	Soil
D-15D	0	2.00	1.00	1:1	0.05 Av.	AD-16	Soil
D-16D	0	1.50	1.75	1:1	0.05 Av.	AD-18	Soil
D-17D	0	.96	1	1:1	0.08 Av.	AU-23, AD-20	Soil

- Notes:
- Dimensions given indicate minimum requirements. Actual dimensions may vary. Minimum required cross-sections will be maintained.
 - The use of line drainage ditches is required when flow velocities exceed approximately 5 feet per second. Rip-rap may be installed where not required.

WATERSHED CHARACTERISTICS

Disturbed Areas

$P = 1.5"$

<u>Watershed</u>	<u>CN</u>	<u>Area (Ac.)</u>	<u>Slope y (%)</u>	<u>Hyd length</u>	<u>$\frac{1000}{S=-10 CN}$</u>	<u>$\frac{l^8(s+1)^7}{L=1900Y^5}$</u>	<u>T=1.67L</u> <u>Time of Conc (hr)</u>
1AD-1A	76	3.70	66	1,300	3.16	0.050	0.090
AD-1B	76	2.12	95.5	520	3.16	0.022	0.037
AD-2A	76	0.97	72	440	3.16	0.020	0.040
AD-2B	83	1.08	59	320	2.05	0.015	0.025
AD-2C	83	0.25	64	140	2.05	0.007	0.012
AD-3A	76	1.49	70	400	3.16	0.021	0.034
AD-3B	76	0.78	71	400	3.16	0.020	0.034
AD-4	83	0.08	49	100	2.05	0.007	0.011
AD-5	76	2.13	73	760	3.16	0.034	0.056
AD-6	90	1.39	1.7	720	1.11	0.131	0.220
AD-7	90	2.95	8.0	1,130	1.11	0.087	0.145
AD-8 upper	90	0.70	70	400	1.11	0.013	0.021
AD-8 lower	90	2.79	1.0	600	1.11	0.148	0.247
AD-9	90	0.35	7.2	420	1.11	0.042	0.069
AD-10 upper	90	0.30	34	320	1.11	0.015	0.026
AD-10 lower	90	0.65	2.0	220	1.11	0.047	0.078
AD-11	95	0.69	20	110	0.53	0.007	0.011
AD-12 upper	90	0.22	64	340	1.11	0.012	0.020
AD-12 lower	90	0.34	8.0	500	1.11	0.045	0.076
AD-13	91	1.78	8.0	800	0.99	0.063	0.106
AD-14	90	0.08	61	120	1.11	0.005	0.009
AD-15	90	4.83-2.19	10.5	530	1.11	0.041	0.069
AD-16*	90	0.77	22	303	1.11	0.018	0.030
AD-17*	90	0.24	27	190	1.11	0.011	0.019
AD-18	90	0.9	3.2	771	1.11	0.102	0.170
AD-19*	90	0.15	49.24	109	1.11	0.005	0.009
AD-20*	90	0.47	30.48	204	1.11	0.0113	0.019

*Areas AD-16, AD-17 and AD-19 are ASCA areas treated by alternate sediment controls.

WATERSHED CHARACTERISTICS
 Undisturbed Areas
 and ASCA Areas Not Reporting To Sediment Pond

<u>Watershed</u>	<u>CN</u>	<u>Area (Ac.)</u>	<u>Slope y (%)</u>	<u>Hyd length l (ft.)</u>	<u>$\frac{1000}{S=10 CN}$</u>	<u>$\frac{l^8(s+1)^7}{L=1900Y^5}$</u>	$P = 1.5"$ <u>T=1.67L</u> <u>Time of Conc (hr)</u>
AU-1	76	6.46	57	1,240	3.16	0.056	0.094
AU-1A	83	1.36	65	460	2.05	0.019	0.032
AU-1B	83	1.16	59	330	2.05	0.015	0.026
AU-1C	76	16.40 16.04	72	1,950	3.16	0.072	0.120
AU-2	76	2.23	62	975	3.16	0.045	0.075
AU-2A	76	1.64	63	1,025	3.16	0.046	0.077
AU-2B	76	3.80	63	1,100	3.16	0.049	0.081
AU-3	76	3.87	65	1,060	3.16	0.047	0.078
AU-3A	76	0.30	64	140	3.16	0.009	0.016
AU-4	76	7.97	63	1,300	3.16	0.056	0.093
AU-4A	83	0.92	52	357	2.05	0.018	0.029
AU-5	76	20.14	77.3	1,700	3.16	0.062	0.104
AU-6	76	2.73	70.0	780	3.16	0.035	0.059
AU-7	76	13.46	69.4	1,400	3.16	0.056	0.094
AU-8	76	4.95	85.7	720	3.16	0.030	0.050
AU-9	76	4.77	64.8	1,440	3.16	0.060	0.100
AU-10	76	35.52	76.1	2,380	3.16	0.082	0.137
AU-11	76	0.62	73.0	570	3.16	0.027	0.045
AU-12	76	2.33	44.1	480	3.16	0.030	0.050
AU-13	76	0.66	77.5	240	3.16	0.013	0.022
AU-14	76	2.43	66.7	620	3.16	0.030	0.050
AU-15	76	0.91	15.6	300	3.16	0.035	0.058
AU-16	76	44.93	71.0	2,580	3.16	0.091	0.152
AU-17	76	30.10	71.0	2,580	3.16	0.091	0.152
AU-18	76	36.55	71.0	2,580	3.16	0.091	0.152
AU-19	76	36.03	60.5	2,190	3.16	0.086	0.144
AU-20	76	20.55	57.6	1,880	3.16	0.078	0.131
AU-21	76	9.45	48.4	1,360	3.16	0.066	0.110
AU-22	76	12.05	60.3	1,120	3.16	0.051	0.084

Summary of Peak Flows for 10-year, 6-hour storm P=1.5"
(SCS type B distribution)

<u>Watershed</u>	<u>Peak Q (cfs.)</u>	<u>Watershed</u>	<u>Peak Q (cfs.)</u>	<u>Watershed</u>	<u>Peak Q (cfs.)</u>
AD-1A	0.48	AU-1B	0.44	AU-23	0.78
AD-1B	0.32	AU-1B	0.44	AU-24	1.66
AD-2A	0.15	AU-1C	1.95	AU-25	0.30
AD-2B	0.41	AU-2	0.30	AU-26	0.10
AD-2C	0.10	AU-2A	0.22	AU-27	0.03
AD-3A	0.23	AU-2B	0.50	AU-28	0.10
AD-3B	0.12	AU-3	0.52	AU-29	0.29
AD-4	0.03	AU-3A	0.05	AU-29A	0.67
AD-5	0.30	AU-4	1.02	AU-30	0.08
AD-6	0.81	AU-4A	0.35	AU-31	0.32
AD-7	1.83	AU-5	2.51	AU-32	0.28
AD-8 upper	0.48	AU-6	0.39	AU-33	0.11
AD-8 lower	1.59	AU-7	1.72	AU-34	0.27
AD-9	0.23	AU-8	0.72	AU-35	0.13
AD-10 upper	0.20	AU-9	0.60	AU-36	0.12
AD-10 lower	0.42	AU-10	4.05	AU-37	13.64
AD-11	0.65	AU-11	0.09	AU-38	1.15
AD-12 upper	0.15	AU-12	0.34	AU-39	0.18
AD-12 lower	0.22	AU-13	0.10	AU-40	15.96
AD-13	1.23	AU-14	0.35	AU-41	1.46
AD-14	0.05	AU-15	0.13	AU-42	0.67
AD-15	4.20 ^{1,44}	AU-16	4.92	AU-43	1.75
AD-16	1.24	AU-17	3.29	BEAR CREEK	108.18
AD-17	0.16	AU-18	4.00	BEAR CREEK ¹	412.70
AD-18	0.55	AU-19	4.03		
AD-19	0.10	AU-20	2.37		
AU-1	0.83	AU-21	1.15		

PEAK
HYDROGRAPH GENERATION PROGRAM

INPUT SUMMARY FOR W.S.: AD-14

STORM:	WATERSHED:
Distribution = SCS Type 'B' Precip. Depth = 1.50 in Duration = 6.00 hr	Curve Number = 90 Time of Conc. = 0.009 hrs Area = 0.08 ac

OUTPUT SUMMARY

Runoff depth = 0.6835 in Initial Abstraction = 0.2222 in Peak Flow = 0.05 cfs (0.6792 iph) At T = 2.50 hrs

INPUT SUMMARY FOR W.S.: AD-15

STORM:	WATERSHED:
Distribution = SCS Type 'B' Precip. Depth = 1.50 in Duration = 6.00 hr	Curve Number = 90 Time of Conc. = 0.069 hr Area = 1.83 <u>2.19</u> ac

OUTPUT SUMMARY

Runoff depth = 0.6835 in Initial Abstraction = 0.2222 in Peak Flow = <u>1.20</u> <u>1.44</u> cfs (0.6506 <u>0.6513</u> iph) At T = 2.50 hrs
--

PEAK
HYDROGRAPH GENERATION PROGRAM

INPUT SUMMARY FOR W.S.: AU-1B

STORM:	WATERSHED:
Distribution = SCS Type 'B' Precip. Depth = 1.50 in Duration = 6.00 hr	Curve Number = 83 Time of Conc. = 0.026 hr Area = 1.16 ac

OUTPUT SUMMARY

Runoff depth = 0.3788 in Initial Abstraction = 0.4096 in Peak Flow = 0.44 cfs (0.3753 iph) At T = 2.50 hrs

INPUT SUMMARY FOR W.S.: AU-1C

STORM:	WATERSHED:
Distribution = SCS Type 'B' Precip. Depth = 1.50 in Duration = 6.00 hr	Curve Number = 76 Time of Conc. = 0.120 hr Area = 16.40 <ins>16.04</ins> ac

OUTPUT SUMMARY

Runoff depth = 0.1873 in Initial Abstraction = 0.6316 in Peak Flow = 1.95 cfs (0.1180 iph) At T = 2.54 hrs

DITCH CHARACTERISTICS

DITCH	CHANNEL SLOPE %	CONTRIBUTING WATERSHED	PEAK Q(cfs)	BANK AND BOTTOM DESC.	MANNING'S $\eta^{(a)}$
D-1D	2 Min, 11 Max	AD-3A	0.23	Rocky Soil	0.03
D-2D	6 Min, 20 Max	AD-3A, AD-5	0.53	Rocky Soil, Bedrock	0.03
D-3D		Replaced with C-5D			
D-4D	2 Min, 7 Av 17 Max	AD-14	0.05	Soil	0.03
D-5D		Replaced with C-5D			
D-6D	2 Min, 4 Max	AD-3A, AD-5, AD-7 AD-9, AD-10, AD-12 AD-14	3.63	Rocky Soil	0.03
D-7D	2 Min, 6 Av 55 Max	AD-1A, AD-1B, AD-2A AD-2B, AD-2C, AD-3B AD-4, AD-6, AD-8	4.90	Soil $D_{50} \leq 3"$	0.03 0.033
D-8D	2 Min, 7 Max	AD-13	1.23	Soil	0.03
D-8D Water Bar	3 Av.	AD-13	1.23	Soil	0.013
D-9D	4 Min, 10 Max	AD-15	1.20 1.44	Soil	0.03
D-10D	7 Min, 50 Max	AD-6, AD-3B, AD-2C	1.03	$D_{50} \leq 4"$	0.033
D-11D	41 Min Near Vertical Max	TIPPLE WASH HOSE	0.25	Grouted rip-rap	0.035
D-12D	81 Av.	TIPPLE WASH HOSE	0.25	Grouted	0.03
D-13D Water Bar	0.5 Av.	AD-6 Partial	0.23	Soil	0.03
D-14D	0.06 Av.	AU-4A	0.35	Soil	0.03
D-15D	0.05 Av.	AD-16	1.24	Soil	0.03
D-16D	0.05 Av.	AD-18	0.55	Soil	0.03
D-17D	0.08	AU-23,AD-20	0.99		

Worksheet

Worksheet for Trapezoidal Channel

Project Description

Worksheet DITCH D-9D
 Flow Element Trapezoidal
 Channel
 Method Manning's
 Formula
 Solve For Channel
 Depth

Input Data

Mannings Coefficient	0.030
Slope	0.040000 ft/ft
Left Side Slope	1.00 V : H
Right Side Slope	1.00 V : H
Bottom Width	1.00 ft
Discharge	1.44 cfs

Results

Depth	0.31 ft
Flow Area	0.4 ft ²
Wetted Perimeter	1.87 ft
Top Width	1.55 ft
Critical Depth	0.35 ft
Critical Slope	0.024744 ft/ft
Velocity	3.56 ft/s
Velocity Head	0.20 ft
Specific Energy	0.51 ft
Froude Number	1.26
Flow Type	Supercritical

Use Minimum Depth = 1 ft
 Velocity < 5 fps

Minimum Freeboard = 0.69 ft
 No rip-rap required

B.C.

7G-130

05/09/08

Worksheet

Worksheet for Trapezoidal Channel

Project Description

Worksheet	DITCH D-9D (Max Slope)
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data

Mannings Coefficient	0.030
Slope	0.100000 ft/ft
Left Side Slope	1.00 V : H
Right Side Slope	1.00 V : H
Bottom Width	1.00 ft
Discharge	1.44 cfs

Results

Depth	0.24 ft
Flow Area	0.3 ft ²
Wetted Perimeter	1.67 ft
Top Width	1.47 ft
Critical Depth	0.35 ft
Critical Slope	0.024744 ft/ft
Velocity	4.941 ft/s
Velocity Head	0.37 ft
Specific Energy	0.61 ft
Froude Number	1.94
Flow Type	Supercritical

B.C.

7G-131

05/09/08

Pavement

02220-875-1750 (Pavement Removal 3")

Area = ~~1,450~~ ~~1,182~~ square yards (~~1,200~~ ~~4.008~~ at Bath-House, 174 at load-out)

Cost = (\$3.85 /sq yd) (1,374 sq yd) = ~~\$5,290~~ ~~16.101~~

Time = (1,374 sq yd) / (420 sq yd/day) = ~~3.27~~ ~~9.96~~ days

Asphalt will be relayed at Trail Canyon

Volume = ~~(114~~ ~~348~~ CY) (2 tons/yd) (1.3 swell factor) = ~~297~~ ~~905~~ Tons

16 ton truck; distance to haul approx. 4 miles round trip = ~~3-8~~ ~~57~~ trips/day

Time = ~~(114~~ ~~348~~ cu yd)/(128 cu yd/day) = ~~0.89~~ ~~2.72~~ days

01590-200- 5300 Dump Truck Cost = (\$823.88/day) (2.72 days) = ~~\$824~~ ~~2.472~~

Cost Subtotal	\$6,114 18.573
Time Subtotal	4.2 12.7 days

Shower House

02220-100-0100 (Framed Portion, includes disposal)

Volume = (92 ft) (50 ft) (8 ft) = 36,800 cu ft

Cost = (\$ 0.24 /cu ft) (36,800 cu ft) = \$ 8,832

Dump Fee = ((36,800 cu ft) / 27) (0.3 rubble volume) (1.35 tons/cy) (\$7.00/ton) = \$3,864

Time = (36,800 cu ft) / (20,100 cu ft/day) = 1.83 days

02220-100-0080 (Masonry Portion, includes disposal)

Volume = (92 ft) (50 ft) (8 ft) = 36,800 cu ft

Boot wash Volume = (12 ft) (5.5 ft) (8 ft) = 528 cu ft

Cost = (\$ 0.24 /cu ft) (37,328 cu ft) = \$ 8,959

Dump Fee = ((37,328 cu ft) / 27) (0.3 rubble volume) (1.35 tons/cy) (\$7.00/ton) = \$3,919

Time = (37,328 cu ft) / (20,100 cu ft/day) = 1.86 days

Concrete Demolition

Foundation Volume = (0.67 ft) (2 ft) (284 ft) = (380.6 cu ft) / 27 = 14.1 cu yds

Footing Volume = (0.67 ft) (2 ft) (319 ft) = (427.5 cu ft) / 27 = 15.8 cu yds

Floor Volume = (92 ft) (50 ft) (0.33 ft) = (1518 cu ft) / (27) = 56.2 cu yds

Boot wash Floor Volume = (12 ft) (5.5 ft) (0.33 ft) = (21.8) / 27 = 0.81 cu yds

Total Volume = 86.9 cu yds

Cost = (86.9 CY) (\$12.78/CY) = \$1,111

Time = (638 s.f.) / (180 s.f./day) + (319 L.F.) / (300 L.F./day) + (4,666 s.f.) / (500 s.f./day) = 13.94 days

02220-875-5550 (Concrete Disposal on Site) 002315-400-1300 (3 CY loader) 02320-200-0320
(16 ton truck)

Volume = (86.9 CY) (1.3 swell factor) = 113.0

Cost = (113 CY) (\$10.69/CY) = \$1,208

Time = (113 cu. yds) / (232 cu. yds/day) = 0.49 days

Cost Subtotal	\$ 27,893
Time Subtotal	18.12 days

Scale House and Sediment Pond B (TS-3)

See Appendix 3L, Table 3L-2

Cut Subtotal	1,454 cu yds
Fill Subtotal	1,454 cu yds

Sediment Pond "A" (TS-4)

See Appendix 3-L, Table 3L-3.

~~Cut (350 sq ft) x (120ft) = 42,000 cu ft =~~
~~Fill (350 sq ft) x (120ft) = 42,000 cu ft =~~

Cut Subtotal = 3,460 cu yds
Fill Subtotal = 3,460 cu yds

Shower House and Sediment Pond C (TS-9)

See Appendix 3-L5-1, Table 3L51-8.

~~Cut (500 sq ft) x (185ft) = 92,500 cu ft =~~
~~Fill (500 sq ft) x (185ft) = 92,500 cu ft =~~

Cut Subtotal = 5,851 10,954 cu yds
Fill Subtotal = 5,851 10,954 cu yds

Wild Horse Ridge (TS-12 thru TS-15)

See Appendix 3-O, Table 3O-2, 3 & 4

Cut Subtotal = 23,641 cu yds
Fill Subtotal = 23,641 cu yds

Note: Approximately 12,500 cu yds of the Wild Horse Ridge volume will be regraded using a D9 dozer, and the remaining volume will be regraded using a 330BL Excavator.

Wild Horse Ridge Tank Seam (TS-16 thru TS-17)

See Appendix 3-P.

Cut Subtotal 11,089 cu yds
Fill Subtotal 11,089 cu yds

Cut Total = 112,025 cu yds
Fill Total = 112,025 cu yds

SOIL PLACEMENT

Areas	Time	Earth			Equipment		
		Cost	Moved	Cu Yds	Used	Cost/hr	(hrs)
Tank Seam Access Road & Portal Pad (TS-10 & TS-11) Fill		Cut 20,310		20,310 330BL		\$153.13	20.2 \$ 3,093
		Hauled		10,661			
Upper Storage Pad (TS-8)	Cut	3,666 Fill		330BL 7,022		\$153.13	14.6 \$ 2,236
Portal Pad Area & Road (TS-7)		Cut Fill		6,445 330BL 18,037		\$153.13	37.7 \$ 5,773
Portal Access Road (TS-6)	Cut	8,126 Fill Excess Cut		330BL 5,573 2,553 included in fill volumes above		\$153.13	11.65 \$ 1,784
Coal Storage Pad (TS-5)		Cut Fill Excess Cut		40,585 D9 Cat 25,157 15,428 included in fill volumes above		\$190.80	50.3 \$ 9,597
Scale House/ Sed Pond B (TS-3)		Cut Fill		1,454 D9 Cat 1,454		\$190.80	2.9 \$ 553
Sediment Pond "A" (TS-4)	Cut	3,460 Fill		3,460 D9 Cat		\$190.80	6.9 \$ 1,317
Shower House/ Sed Pond C (TS-9)	Cut	-5,851 10,954 Fill		D9 Cat -5,851 10,954		\$190.80	11.7 \$ 2,232 21.9 4,178
Wild Horse Ridge Area*** (TS-12 thru TS-15)	Cut	11,141 12,500 Fill		330BL D9 Cat 23,641		\$153.13 \$190.80	23.3 \$ 3,568 25.0 \$ 4,770
Wild Horse Ridge Tank Seam (TS-16 thru TS-17)	Cut Fill	1,016 10,073 11,089		D9 Cat 330BL		\$153.13 \$190.80	1.87 \$ 286 20.1 \$ 3,835
Totals		Cut Fill		110,462 125,138 110,708 126,697			219.82 236.42 \$39,044 40,990 (27.48 days)

*See Appendix 3-L and the following page.

**Excess Cut will be hauled from TS-5 and TS-6 to TS-7 and TS-8, as discussed in Appendix 3-L.

***Wild Horse Ridge material being relocated with the excavator will be hauled an average distance of 200 ft, as shown on the following pages.

e. Revegetation

Hydroseeding (Section 9.5)

C0150256 (Hydro Spreader)

Area = 38.3 38.7 acres = 1,669 1,686 MSF

Cost = (\$19.85 20.95/MSF) (1,669 1,686 MSF) = \$33,130 35,322

C0150255 (Tractor Spreader)

Area = 38.3 38.7 acres = 1,669 1,686 MSF

Cost = (\$10.28 12.71/MSF) (1,669 1,686 MSF) = \$17,157 21,429

C0150251 (Seed Material)

Area = 38.3 38.7 acres

Cost = (\$974.10 533.38/acre) (38.3 38.7) = \$37,308 20,642

C0150253 (Hydromulch)

Area = 38.3 38.7

Cost = (\$410.25 523.95/acre) (38.3 38.7) = \$15,712 20,277

C0150252 (3,704 10,700 Seedlings)

Cost = (\$0.77 1.71 each) (3834 10,700) = \$2,952 18,297

02370-550-0120 Install Matting (Section 9.5)

Cost = (\$7.5 7.00 sys) (29,040 4,840) = \$ 217,800 203,280

02315-400-0260 (Pocking)

Cost = (\$1.56 1.86/cu yd) (29,689 340 cu yd) = \$46,315 10,435

Assume 25% reseeding = \$92,594 82,420

Time = (38.3 38.7 acres) / (4 acres/day) = 9.58 9.68 days

Cost Total \$462,968 412,102
Time Total 9.58 9.68 days

f. Monitor Well Plugging

Assume \$5,000 per well

The above listed costs include reclamation costs added between 1985 and the latest modification.

SECTION D-D
SEDIMENT POND "C"

— PRE-MINING/POST-MINING
— OPERATION

